Message

From: d'Almeida, Carolyn K. [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=9EC4401AFA1846DD93D52A0DDA973581-CDALMEID]
Sent: 2/12/2016 8:28:54 PM
To: Wayne Miller [Miller.Wayne@azdeq.gov]; steve [steve@uxopro.com]
CC: Davis, Eva [Davis.Eva@epa.gov]; Dan Pope [DPope@css-dynamac.com]
Subject: RE: 2016-2-11 - WAFB - EBR is trademarked - Ha Ha - who knew

Sulfate Enhanced BioRemediation SEBR
Anaerobic Enhanced BioRemediation AEBR

From: Wayne Miller [mailto:Miller.Wayne@azdeq.gov]
Sent: Thursday, February 11, 2016 5:46 PM
To: steve <steve@uxopro.com>; d'Almeida, Carolyn K. <dAlmeida.Carolyn@epa.gov>
Subject: 2016-2-11 - WAFB - EBR is trademarked - Ha Ha - who knew

The EBR acronym is trademarked. Who knew? I am not up on my law game, but does this mean we have to call enhanced bioremediation something else? ☺

EBR™ - Radius of Influence of Bio-Remediation treatment of soil and Groundwater using an Electro-kinetic cell system.

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Abstract At pH between 5 and 9, mineralization of hydrocarbons in groundwater is highly dependent on oxygen availability. The ultimate oxygen demand, coupled with the rate of degradation, establishes the rate at which oxygen must be delivered. Technologies based on oxygen release to the soil and/or the groundwater such as oxygen diffusion or oxygen. Releasing chemicals (Regenesis ORC) have generally a radius of influence of few meters. This fact has several consequences on the practice of in-situ hydrocarbons bio treatment: 1. It requires a large numbers of reactor installations resulting with a higher cost of the treatment. 2. It stops the regular activity of the pumping station or the site during the time of the treatment. A reactor-cell that combined electro-bioremediation and electro kinetic systems has been developed by Elie ELGRESSY. Because the EBR™ cell rotates the groundwater and thereby mixes the dissolved oxygen throughout the treatment area, the uniform radial diffusion of oxygen in the soil and the use of electro-kinetics system increase the radius of influence of the treatment. In this contribution, we first present a theoretical basis for the analysis of the radius of influence on the concentration of dissolved oxygen (D.O.) and the Redox potential (ORP) for a general electro kinetics bioremediation system. The simulation runs show clearly that first the rotation of the groundwater near the cell creates an homogeneous boundary condition at the reactor cell resulting with an increase in the radius of influence of 2 to 3 compared with simple oxygen diffusion system. Moreover, the electric field created by an anode and cathode system increases the radius of influence by creating an additional flux in the charged water. In order to validate this new technology, a pilot study was performed in the Haifa region Israel. The software was calibrated on data collected in a pilot study. An analysis of the radius of influence on data results shows the efficiency of the new technology.

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